

## REMARKS

Claims 1-9 and 11-20 are pending in the application and have been finally rejected. In the Advisory Action of January 26, 2009, the final rejection of October 30, 2008 was maintained and the entry of Applicants' amendment of December 30, 2008 was denied.

To briefly recap, the present invention relates to new pseudoplastic aqueous dispersions, also referred to as powder slurries. Powder slurries can suffer from known problems. In some instances, powder slurries may undergo initial drying partly as a film instead of a powder and, as a consequence of this, the popping limit in the applied films may drop below a level tolerated by the customer. On curing, in particular on thermal curing, the enclosed water in such cases is given off too late and then leads to pops and other surface defects.

Another potential problem is that clearcoats produced from powder slurries can be susceptible to blushing, i.e., the whitening of the clearcoats following moisture exposure. Still another potential problem is that, even when avoiding both popping and blushing by using certain improvements in the prior art, the chemical resistance of the clearcoats produced from the corresponding powder slurries can suffer.

The present compositions were unexpectedly found to simultaneously avoid all of the above-mentioned problems. This has been demonstrated in the unexpected results shown in Table 2, on page 21, of the originally filed application, as explained more fully below.

In particular, as recited in claim 1, the novel composition of the present invention is a pseudoplastic aqueous dispersion comprising solid and/or high-viscosity particles that are dimensionally stable under storage and application conditions, in dispersion in a continuous aqueous phase, wherein the dispersion also comprises at least one solid hydrophobic polyurethanepolyol, free of ionic and potentially ionic groups, comprising cycloaliphatic structural units and having a glass transition temperature greater than 15°C.

1. **The Withdrawal of the Previous Rejection of claims 1 and 13 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.**

Applicants thank the Examiner for the withdrawal of the section 112 rejection.

2. **Rejection of claims 1-9, 11-12 under 35 U.S.C. §103(a), as being unpatentable over Woltering et al. (WO 02/38685, citations based on English equivalent, US 7,041,729) in view of Mayer et al. (EP 0 708 788, citations based on English equivalent, US 6,372,875) and Ott et al.(DE 100 40 223, citations based on English equivalent, US 2003/0144413), hereafter, respectively, “Woltering,” “Mayer,” and “Ott.”**

The Advisory Action states, in response to Applicants' arguments in the Amendment of December 30, 2008, that, regarding the combination of Woltering, Mayer, and Ott, all three references teach a “preference” for using ionic groups, or so-called internal emulsifiers.

It is respectfully submitted, however, that all three references require ionic groups. Literally it is not merely a “preference” in any of the references. A requirement is not subject to a change of preferences.

Furthermore, the previous Office Action of October 30, 2008 had already conceded that Woltering did not teach the polyurethanepolyol free of ionic and potentially ionic groups. The Office Action stated, “Woltering does not teach the polyurethanepolyol (C) free of ionic and potentially ionic groups.” [Emphasis added.] 10/30/2008 Office Action page 5, lines 14-15.

The Office Action, therefore, cited Ott for teaching pseudoplastic powdered lacquer slurries wherein “it is preferred to aim for a low level of such groups [ion-forming groups], since when the customary crosslinking agents are used, free groups of this kind remain in the film and may reduce the resistance to ambient substances and chemicals.” Based on that teaching, the Office Action stated that it would have been obvious to have used external emulsifiers as taught by Ott.

The Advisory Action also states that Ott shows that external emulsifiers are an equivalent of internal emulsifiers, namely ionic groups. 01/26/2008 Advisory Action page 2, last paragraph, citing para. 0068 and 0069 of Ott. The Advisory Action further asserts: “While Ott does not himself use external emulsifiers, he recognizes that the prior art teaches these two as equivalents.” 01/26/2008 Advisory Action page 2, last paragraph.

Applicants respectfully submit, however, that Ott actually states, “In general, therefore, the chemical nature of the binder is not restrictive provided it comprises ion forming groups which

are convertible by neutralization into salt groups and so are able to take on the function of ionically stabilizing the particles in water.” Column 4, para. 0070. Moreover, in the Examples in Ott, a polyacrylate is used having an acid no. of 43.4 mg KOH/g solid resin. Col. 7, para. 0121.

Although Applicants can understand the Examiner's position that both external and internal emulsifiers have known use, in general, for providing compatibility of polyurethanes with water, an important point is that the prior art strongly suggests, in the particular kind of pseudoplastic aqueous dispersions used in the cited prior art, that this is undesirable, perhaps even not functional. Clearly, each reference would not have required ionic groups if its use was thought equivalent to an external emulsifier, especially since Ott suggests it is desirable to attempt lower the number of ionic groups. If ionic groups were considered unnecessary, therefore, it would have made sense to mention that possibility, which the Examiner concedes is absent from Ott.

Moreover, since Ott is used in the rejection to modify Woltering, it should be noted that the claims of Woltering require ionic groups and, which also strongly suggests non-equivalence to external emulsifiers, since otherwise substituting an external emulsifier would be an obvious method of designing around the claims of Woltering, as Woltering would have known. So it is a matter of practical logic that, since each and reference in the reference requires ionic groups, including claims or all examples, that Mayer, Ott, and Woltering strongly support the teaching that the (potential) ionic groups are, in fact, not completely replaceable.

The test, in modifying Woltering with a secondary prior art reference, is not whether the composition would still be usable, although that would be unpredictable, but whether the skilled artisan would find it equivalent or *prima facie* obvious.

Regarding Mayer, this patent similarly requires at least one compound containing two groups which are reactive toward isocyanate groups containing, at least in part, at least one group capable of forming anions which is neutralized before or after incorporation into the polyurethane molecule. (Mayer, abstract, emphasis added).

With respect to Woltering, the Advisory Action states:

Woltering additionally teaches that the particles are obtained even without the aid of additional external emulsifiers if the slurry of the invention contains a certain amount of potentially ionic groups (3:30-40). While Woltering teaches that internal emulsifiers are preferred, and indeed excludes external modifiers from his invention, it is clear that the possibility exists to substitute the two, as Woltering himself states the possibility.”

01/26/2008 Advisory Action page 2, last paragraph

Applicants submit, however, that Woltering, in fact, requires that the particles are used in dispersion with, as binder, at least one polyol with an OH number >110 mg KOH/g, containing potentially ionic groups, such that the powder clearcoat slurry has a potentially ionic group content of from 0.05 to 1 meq/g of solids. (Woltering, Abstract, emphasis added).

As mentioned in Applicants' Amendment of October 30, 2008, Woltering requires that the composition must be free of external emulsifiers. Abstract. Therefore, it does not follow that Ott teaches the use of external emulsifiers, when both Ott and Woltering state their compositions are free of external modifiers. Second, it does not follow that a reduction in ion-forming groups means that the composition is free of ion-forming groups. Rather, the ion-forming groups are still necessary in Ott, just preferably at a low level in order to improve chemical resistance. Thus, the Office Action, reads “being free from” (ionizable groups) into Ott when Ott requires such groups, albeit preferably at relatively low levels.

The Advisory Action further states:

“This [the previously quoted interpretations of Woltering and Ott in the Advisory Action] is not teaching away external modifiers, as no disadvantages are taught, only a preference for internal emulsifiers, which naturally are not used in combination with external modifiers...substituting external emulsifiers for internal emulsifiers, while in no way the preferred embodiment, would not render Woltering unsuitable for its intended purpose, as the function of the ionic groups remains.” [Emphasis added.]

01/26/2008 Advisory Action page 2, last paragraph, to page 3, first paragraph.

The Applicants submit, however, that Woltering wishes to eliminate blushing without losing chemical resistance and, at the same time, avoid popping and other surface defects. Hence, the purpose of Woltering resembles that of the present invention. Woltering attempts to solve these problems in an entirely different way, by introducing potentially ionic groups in a secondary

particle or polyol binder having a high OH number, in a composition free from organic solvents and external emulsifiers. Col. 2, lines 3-39. Hence, the proposed modification to Woltering would defeat the very purpose of Woltering according to Woltering. That is a disadvantage. All of the Examples in Woltering provide an acid number, as a measure of the potentially ionizable groups in the polyol. It is a combination of the acid number and OH number which achieves "the object on which the present invention is based." Woltering, column 2 lines 57-65. Not to achieve the object of the invention is also a disadvantage.

Finally, the Advisory Action states, "In response to applicant's allegations of unexpected results, it is noted that there are no comparative examples in which an internal emulsifier has been used."

Applicants respectfully submit that the Examples in the present application show unexpectedly superior results. As shown in Table 2, on page 21, of the present specification, clearcoats according to the invention did not show blushing, was able to achieve a glossy appearance, and did not show surface defects (very good leveling and no pops), as compared to V2, without the polyurethanepolyol component, which showed surface defects and less chemical resistance. It is respectfully submitted, contrary to the suggestion by the Examiner, that comparative examples with respect to an internal emulsifier are not necessary for unexpected results. Furthermore, the suggested new comparison represents a comparison to a theoretical obviousness rejection, since there are no examples in the closest prior art that does not contain (potentially) ionic groups.

The courts have held that "[i]f the proposed modification would render the prior art invention being modified unsatisfactorily for its intended purpose, then there is no suggestion or motivation to make the proposed modification." *In re Gordon* 733 F. 2d 900, 221 USPQ 1125 (Fed. Cir. 1984). [Emphasis added.] The courts have also held that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." *In re Ratti* 270 F. 2d 810, 123 USPQ 349 (CCPA 1959). [Emphasis added.]

A *prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997), emphasis added. It is respectfully submitted that requiring an element, that is described as necessary, the absence of which is taught to be significantly disadvantages, does represent a teaching away.

In view of the above, Applicants respectfully assert that claims 1-9 and 11-20 are patentable under 35 U.S.C. §103(a). Withdrawal of this rejection is respectfully requested.

3. **Rejection of claim 13 under 35 U.S.C. §103(a), as being unpatentable over Woltering et al. (WO 02/38685, citations based on English equivalent, US 7,041,729) in view of Mayer et al. (EP 0 708 788, citations based on English equivalent, US 2003/0144413) and Ott et al. (DE 100 40 223, citations based on English equivalent, US 2003/0144413).**

This rejection, maintained in the Advisory Action, applies to the method of claim 13 essentially the same arguments as in the above rejection of the composition claims. Applicants, therefore, respectfully assert that independent claim 13, as currently amended, is patentable over the combination of Woltering, Mayer, and Ott for at least the same reasons discussed above. Taken as a whole, it is respectfully submitted that the cited combination fails to provide the requisite motivation for a *prima facie* case of obviousness. Withdrawal of this rejection is respectfully requested.

**Entry of the Applicants' Amendment of December30, 2008**

The Advisory Action states, "The amended claims are not being entered as they raise the new issue of the polyurethanepolyol being hydrophobic, rather than just free of ionic and potentially ionic groups." Advisory Action page 2, para. 3.

The Advisory Action is correct that hydrophobic excludes groups in addition to ionic and potentially ionic groups. However, that is not believed to raise any new issue that would require search or further consideration at this time. The Advisory Action fails to explain what needs to be considered that might prevent the present application from being allowed.

In this regard, it should be noted that the previous Office Action of October 31, 2008 alleged that Claims 1 and 13 were indefinite and failed to particularly point out and distinctly claim the subject matter which Applicants regard as the invention, because the claims state, “free of ionic and potentially ionic groups.” The Office Action alleged that it is unclear what constitutes “potentially ionic,” as many groups could be potentially ionic depending on how they are reacted.

Applicants pointed out in the Amendment of December 30, 2008 that it is clear that “potentially ionic” did not depend on “how they [the potentially ionic groups] are reacted,” as alleged in the Office Action, but rather related to the effect on hydrophilicity and dispersability, which can be adjusted by neutralization of an acid or base to the corresponding ionic salt. The phrase “potentially ionic” is mentioned in the present specification in the following context:

The solid polyurethanepolyol (C) is preferably hydrophobic, which is to say that in a liquid two-phase system composed of an apolar organic phase and an aqueous phase it tends to depart the aqueous phase and to collect predominantly in the organic phase. Preferably, therefore, the solid polyurethanepolyol (C) contains only a small number, if any, of pendant hydrophilic functional groups, such as (potentially) ionic groups or poly(oxyalkylene) groups. [Page 5, line 27, to page 6, line 3.]

Thus, the term “hydrophobic” clarified the meaning of “free of ionic and potentially ionic groups,” which was already present in the claim.

In other words, amended Claims 1 and 13 further recited that the polyurethanepolyol (C) is hydrophobic, as defined in the specification, which is substantially related to the polyurethanepolyol containing a small number, if any, of “(potentially) ionic groups.” Since the claim had already been amended to recite that the polyurethanepolyol was “free of ionic and potentially ionic groups,” this did not add anything significantly new that needs to be considered.

Specifically, the word “hydrophobic” does not change any of the present issues with respect to the present final rejection that the Examiner can point to. The term “hydrophobic” does not broaden the claims, and there is no reason that the Examiner would need a further search

if, as alleged, the claims are patentable over the presently cited art. For the following reasons, in addition to the reasons extensively discussed in Applicants' amendment of October 31, 2008, the Applicants believe the claims are clearly patentable over the prior art of record.



**CONCLUSION**

Applicants respectfully submit that the Application and pending claims are patentable in view of the foregoing amendments and/or remarks. A Notice of Allowance is respectfully requested. As always, the Examiner is encouraged to contact the Undersigned by telephone if direct conversation would be helpful.

Respectfully Submitted,

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